

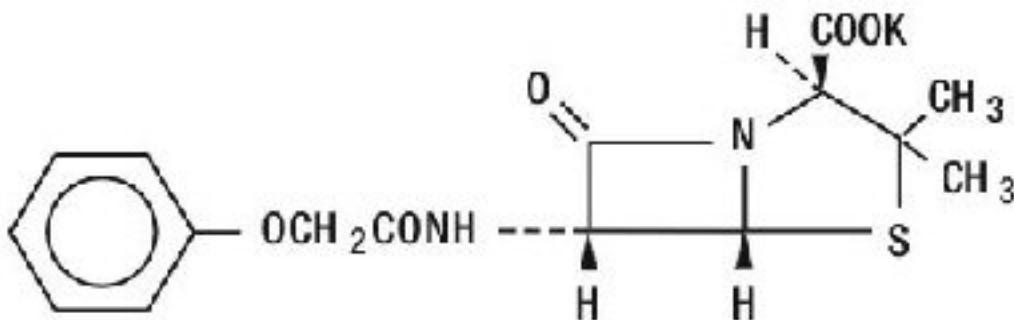
PENICILLIN V POTASSIUM - penicillin v potassium powder, for solution

Bristol-Myers Squibb Company

To reduce the development of drug-resistant bacteria and maintain the effectiveness of Penicillin V Potassium for Oral Solution and other antibacterial drugs, Penicillin V Potassium for Oral Solution should be used only to treat or prevent infections that are proven or strongly suspected to be caused by bacteria.

DESCRIPTION

Penicillin V Potassium for Oral Solution, the potassium salt of penicillin V, monopotassium [2S-(2 α ,5 α ,6 β)]-3,3-dimethyl-7-oxo-6-[(phenoxyacetyl)amino]-4-thia-1-azabicyclo [3.2.0] heptane-2-carboxylate, is an antibacterial agent having the following structural formula:



$C_{16}H_{17}KN_2O_5S$ MW = 388.48.

Penicillin V Potassium for Oral Solution is a powder which, when reconstituted as directed, yields a solution in which each 5 mL contains penicillin V potassium equivalent to 125 mg (200,000 units) or 250 mg (400,000 units) penicillin V. The inactive ingredients are acacia, citric acid, DL-menthol, FD&C Red No. 40, natural and artificial flavorings, sodium benzoate, sodium citrate, sodium saccharin, sucrose, and thymol.

CLINICAL PHARMACOLOGY

Penicillin V exerts a bactericidal action against penicillin-sensitive microorganisms during the stage of active multiplication. It acts through the inhibition of biosynthesis of cell-wall mucopeptide. It is not active against the penicillinase-producing bacteria, which include many strains of staphylococci. The drug exerts high *in vitro* activity against staphylococci (except penicillinase-producing strains), streptococci (groups A, C, G, H, L, and M), and pneumococci. Other organisms sensitive *in vitro* to penicillin V are *Corynebacterium diphtheriae*, *Bacillus anthracis*, Clostridia, *Actinomyces bovis*, *Streptobacillus moniliformis*, *Listeria monocytogenes*, Leptospira, and *Neisseria gonorrhoeae*. *Treponema pallidum* is extremely sensitive.

The potassium salt of penicillin V has the distinct advantage over penicillin G in resistance to inactivation by gastric acid. It may be given with meals; however, blood levels are slightly higher when the drug is given on an empty stomach. Average blood levels are two to five times higher than the levels following the same dose of oral penicillin G and also show much less individual variation. Once absorbed, penicillin V is about 80% bound to serum protein. Tissue levels are highest in the kidneys, with lesser amounts in the liver, skin, and intestines. Small amounts are found in all other body tissues and the cerebrospinal fluid. The drug is excreted as rapidly as it is absorbed in individuals with normal kidney function; however, recovery of the drug from the urine indicates that only about 25% of the dose given is absorbed. In neonates, young infants, and individuals with impaired kidney function, excretion is considerably delayed.

INDICATIONS AND USAGE

Penicillin V potassium is indicated in the treatment of mild to moderately severe infections due to penicillin G-sensitive microorganisms. Therapy should be guided by bacteriologic studies (including sensitivity tests) and by clinical response.

NOTE: Severe pneumonia, empyema, bacteremia, pericarditis, meningitis, and arthritis should not be treated with penicillin V during the acute stage.

Indicated surgical procedures should be performed.

The following infections will usually respond to adequate dosage of penicillin V.

Streptococcal infections (without bacteremia). Mild-to-moderate infections of the upper respiratory tract, scarlet fever, and mild erysipelas.

NOTE: Streptococci in groups A, C, G, H, L, and M are very sensitive to penicillin. Other groups, including group D (enterococcus), are resistant.

Pneumococcal infections. Mild to moderately severe infections of the respiratory tract.

Staphylococcal infections—penicillin G-sensitive. Mild infections of the skin and soft tissues.

NOTE: Reports indicate an increasing number of strains of staphylococci resistant to penicillin G, emphasizing the need for culture and sensitivity studies in treating suspected staphylococcal infections.

Fusospirochetosis (Vincent's gingivitis and pharyngitis)—Mild to moderately severe infections of the oropharynx usually respond to therapy with oral penicillin.

NOTE: Necessary dental care should be accomplished in infections involving the gum tissue.

Medical conditions in which oral penicillin therapy is indicated as prophylaxis:

For the prevention of recurrence following rheumatic fever and/or chorea: Prophylaxis with oral penicillin on a continuing basis has proven effective in preventing recurrence of these conditions.

To reduce the development of drug-resistant bacteria and maintain the effectiveness of Penicillin V Potassium for Oral Solution and other antibacterial drugs, Penicillin V Potassium for Oral Solution should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy.

CONTRAINDICATIONS

A previous hypersensitivity reaction to any penicillin is a contraindication.

WARNINGS

SERIOUS AND OCCASIONALLY FATAL HYPERSENSITIVITY (anaphylactic) REACTIONS HAVE BEEN REPORTED IN PATIENTS ON PENICILLIN THERAPY. THESE REACTIONS ARE MORE LIKELY TO OCCUR IN INDIVIDUALS WITH A HISTORY OF PENICILLIN HYPERSENSITIVITY AND/OR A HISTORY OF SENSITIVITY TO MULTIPLE ALLERGENS. THERE HAVE BEEN REPORTS OF INDIVIDUALS WITH A HISTORY OF PENICILLIN HYPERSENSITIVITY WHO HAVE EXPERIENCED SEVERE REACTIONS WHEN TREATED WITH CEPHALOSPORINS. BEFORE INITIATING THERAPY WITH PENICILLIN V POTASSIUM, CAREFUL INQUIRY SHOULD BE MADE CONCERNING PREVIOUS HYPERSENSITIVITY REACTIONS TO PENICILLINS, CEPHALOSPORINS, OR OTHER ALLERGENS. IF AN ALLERGIC REACTION OCCURS, PENICILLIN V POTASSIUM SHOULD BE DISCONTINUED AND APPROPRIATE THERAPY INSTITUTED. SERIOUS ANAPHYLACTIC REACTIONS REQUIRE IMMEDIATE EMERGENCY TREATMENT WITH EPINEPHRINE, OXYGEN, INTRAVENOUS STEROIDS, AND AIRWAY MANAGEMENT, INCLUDING INTUBATION, SHOULD ALSO BE ADMINISTERED AS INDICATED.

Pseudomembranous colitis has been reported with nearly all antibacterial agents, including penicillins, and may range in severity from mild to life-threatening. Therefore, it is important to consider this diagnosis in patients who present with diarrhea subsequent to the administration of antibacterial agents.

Treatment with antibacterial agents alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of "antibiotic-associated colitis".

After the diagnosis of pseudomembranous colitis has been established, therapeutic measures should be initiated. Mild cases of pseudomembranous colitis usually respond to drug discontinuation alone. In moderate to severe cases, consideration should be given to management with fluids and electrolytes, protein supplementation and treatment with an antibacterial drug clinically effective against *C. difficile* colitis.

PRECAUTIONS

General

Penicillin should be used with caution in individuals with histories of significant allergies and/or asthma.

Prescribing Penicillin V Potassium for Oral Solution in the absence of a proven or strongly suspected bacterial infection or a prophylactic indication is unlikely to provide benefit to the patient and increases the risk of the development of drug-resistant bacteria. The oral route of administration should not be relied upon in patients with severe illness, or with nausea, vomiting, gastric dilatation, cardiospasm, or intestinal hypermotility.

Occasional patients will not absorb therapeutic amounts of orally administered penicillin.

In streptococcal infections, therapy must be sufficient to eliminate the organism (10-day minimum); otherwise the sequelae of streptococcal disease may occur. Cultures should be taken following completion of treatment to determine whether streptococci have been eradicated.

Prolonged use of antibiotics may promote the overgrowth of nonsusceptible organisms, including fungi. Should superinfection occur, appropriate measures should be taken.

Information for Patients

Patients should be counseled that antibacterial drugs including Penicillin V Potassium for Oral Solution should only be used to treat bacterial infections. They do not treat viral infections (e.g., the common cold). When Penicillin V Potassium for Oral Solution is prescribed to treat a bacterial infection, patients should be told that although it is common to feel better early in the course of therapy, the medication should be taken exactly as directed. Skipping doses or not completing the full course of therapy may (1) decrease the effectiveness of the immediate treatment and (2) increase the likelihood that bacteria will develop resistance and will not be treatable by Penicillin V Potassium for Oral Solution or other antibacterial drugs in the future.

Pregnancy

Teratogenic Effects Pregnancy Category B

Reproduction studies performed in the mouse, rat, and rabbit have revealed no evidence of impaired fertility or harm to the fetus due to penicillin V. Human experience with the penicillins during pregnancy has not shown any positive evidence of adverse effects on the fetus. There are, however, no adequate and well-controlled studies in pregnant women showing conclusively that harmful effects of these drugs on the fetus can be excluded. Because animal reproduction studies are not always predictive of human response, penicillin should be used during pregnancy only if clearly needed.

Nursing Mothers

Penicillins are excreted in milk. Caution should be exercised when penicillins are administered to a nursing woman.

ADVERSE REACTIONS

Although the incidence of reactions to oral penicillins has been reported with much less frequency than following parenteral therapy, it should be remembered that all degrees of hypersensitivity, including fatal anaphylaxis, have been reported with oral penicillin.

The most common reactions to oral penicillin are nausea, vomiting, epigastric distress, diarrhea, and black hairy tongue. The hypersensitivity reactions reported are skin eruptions (maculopapular to exfoliative dermatitis), urticaria and other serum sicknesslike reactions, laryngeal edema, and anaphylaxis. Fever and eosinophilia may frequently be the only reaction observed. Hemolytic anemia, leukopenia, thrombocytopenia, neuropathy, and nephropathy are infrequent reactions and usually associated with high doses of parenteral penicillin.

OVERDOSAGE

In case of overdosage, discontinue medication, treat symptomatically and institute supportive measures as required.

DOSAGE AND ADMINISTRATION

The dosage of Penicillin V Potassium for Oral Solution should be determined according to the sensitivity of the causative microorganism and the severity of infection, and adjusted to the clinical response of the patient.

The usual dosage recommendations for adults and children 12 years and over are as follows:

Streptococcal Infections—mild to moderately severe—of the upper respiratory tract and including scarlet fever and erysipelas: 125 to 250 mg (200,000 to 400,000 units) every 6 to 8 hours for 10 days.

Pneumococcal Infections—mild to moderately severe—of the respiratory tract, including otitis media: 250 mg to 500 mg (400,000 to 800,000 units) every 6 hours until the patient has been afebrile for at least 2 days.

Staphylococcal Infections—mild infections of skin and soft tissue (culture and susceptibility tests should be performed): 250 mg to 500 mg (400,000 to 800,000 units) every 6 to 8 hours.

Fusospirochetosis (Vincent's infection) of the oropharynx—mild to moderately severe infections: 250 mg to 500 mg (400,000 to 800,000 units) every 6 to 8 hours.

For the prevention of recurrence following rheumatic fever and/or chorea: 125 mg to 250 mg (200,000 to 400,000 units) twice daily on a continuing basis.

HOW SUPPLIED

Penicillin V Potassium for Oral Solution, USP

Each 5 mL of reconstituted solution contains penicillin V potassium equivalent to 125 or 250 mg penicillin V.

NDC 0781-6120-46	125 mg/5 mL bottle of 100 mL
NDC 0781-6120-48	125 mg/5 mL bottle of 200 mL
NDC 0781-6121-46	250 mg/5 mL bottle of 100 mL
NDC 0781-6121-48	250 mg/5 mL bottle of 200 mL

Directions for Dispensing Oral Solutions

Prepare this formulation at the time of dispensing. For ease in preparation, add water to the bottle in two portions and shake well after each addition. Add the total amount of water as directed on the labeling of the package being dispensed. After reconstitution, solution must be stored in a refrigerator. Discard any unused portion after 14 days.

Keep tightly closed.

Manufactured by:

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